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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Sp_Wa/2014-15 21.07.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/433/2014-15 Dated: 05.06.2014
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	21.07.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2022	2023	2024	
2	Weight of basket suspended in water	W_2 g	755	2020	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1267	1268	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2018	2019	2020	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	751	751	751	
6	Weight of oven dried aggregate	W_4 g	2001	1999	2012	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.664	2.662	2.679	2.668
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.726	2.735	2.708	2.723
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.85%	1.00%	0.40%	0.75%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

Note:

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Shape_T/2013-14 : 18.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, Bangalore.
Name of Work	: Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No.08, BBMP, Bangalore.
Reference	: AEE/KH/433/2014-15 Dated: 05.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 18.07.2014

Result : Flakiness Index = **11.06%**

Elongation Index = **13.28%**

Result : Combined Flakiness & Elongation index **24.34%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

Note:

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/433/2014-15 Dated: 05.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	18.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	392	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	90	91	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	302	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.96	23.16	**23.06**

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC(QB)/2014-15 18.07.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager,** KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No.08, BBMP, Bangalore.
REFERENCE	:	AEE/KH/433/2014-15 Dated: 05.06.2014
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	18.07.2014

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	88	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	45	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	298	Min. 220

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/AGG/2013-14 21.07.2014

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/433/2014-15 Dated: 05.06.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	21.07.2014

Total Weight of Sample: **5150** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	385	7.5	7.48	92.52	90-100	
4.75	2590	50.3	57.77	42.23	35-51	
2.36	660	12.8	70.58	29.42	24-39	
1.18	485	9.4	80.00	20.00	15-30	
0.3	395	7.7	87.67	12.33	9-19	
0.075	315	6.1	93.79	6.21	3-8	

Total Weight of Sample: **5250** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	390	7.4	7.43	92.57	90-100	
4.75	2895	55.1	62.57	37.43	35-51	
2.36	650	12.4	74.95	25.05	24-39	
1.18	380	7.2	82.19	17.81	15-30	
0.3	320	6.1	88.29	11.71	9-19	
0.075	300	5.7	94.00	6.00	3-8	

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of Work	Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/433/2014-15 Dated: 05.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	21.06.2014

Result : Flakiness Index = **11.25%**

Elongation Index = **13.10%**

Result : Combined Flakiness & Elongation index 24.35%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/433/2014-15 Dated: 05.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	21.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	302	
4	Aggregate Impact value = percent fines	22.11	22.56	
	100* (W_2/W_1)%			22.34

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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21.06.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of Work : Improvements to roads and drains at Maruthinagara behind Big Bazaar in Ward No. 8, BBMP, Bangalore.

Reference : AEE/KH/433/2014-15 Dated: 05.06.2014

Date of Testing : 21.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25575**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	775	775	3.0	97.0	95-100
22.4	6548	7323	28.6	71.4	60-80
11.2	4823	12146	47.5	52.5	40-60
4.75	3724	15870	62.1	37.9	25-40
2.36	3520	19390	75.8	24.2	15-30
0.600	4030	23420	91.6	8.4	8-22
0.075	1870	25290	98.9	1.1	0-8

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1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

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